

Application No.: 10/500,317

Docket No.: 12088/019001

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows.

1.-59. (Cancelled)

60. (Currently Amended) A plasma surface processing apparatus for processing a surface of an object to be processed with a processing gas plasmatized under an electric field applied from an electric power source, said apparatus having an electrode structure having a gas passage through which said processing gas is passed from an upstream side to a downstream side of a passage direction and for generating said electric field in said gas passage, said electrode structure comprising:

an elongate metallic first electrode body that is longer in a longitudinal direction orthogonal to said passage direction and shorter in the passage direction,

the first electrode body having an elongate outer first surface which is a flat surface crossing with an arranging direction orthogonal to both the passage direction and the longitudinal direction and which is longer in said longitudinal direction and shorter in the passage direction;

an elongate metallic second electrode body that is longer in said longitudinal direction and shorter in the passage direction,

said second electrode body being arranged in parallel with said first electrode body in the arranging direction,

said second electrode body having an elongate outer second surface which is a flat surface crossing with the arranging direction and facing said first surface

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in said arranging direction and which is longer in the longitudinal direction and shorter in the passage direction,

one of said first and second electrode bodies being connected with said electric power source,

the other of said first and second electrode bodies being electrically grounded, said electric field being generated between said first and second surfaces; and

an elongate dielectric first case body that is longer in said longitudinal direction and shorter in the passage direction, said first case body being arranged in parallel with said first and second electrode bodies,

said first case body being formed a cross section orthogonal to said longitudinal direction into a U-shape so that said first case body has a first internal space and a first opening,

a side of the first internal space nearer to the second electrode body in the arranging direction and both the upstream and the downstream sides of the first internal space in the passage direction being surrounded by the first case body and a remaining side of the first internal space farther from the second electrode body in the arranging direction being opened to an outside and provided as the first opening,

a plane of the first opening is parallel to the longitudinal direction,

said first electrode body being received in said first internal space so that said first surface is contacted with an inner peripheral surface of said first case body,

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said second electrode body being disposed outside the first internal space of said dielectric first case body in said arranging direction,

said first opening facing away from said second electrode body,

said gas passage being formed between said dielectric first case body and said second electrode body,

said gas passage being longer in the longitudinal direction and shorter in the passage direction,

a first end of the gas passage [[in]] on the upstream side of the passage direction being connected with a source of the processing gas,

a second end [[the]] of the gas passage [[in]] on the downstream side of the passage direction being connected with a blowoff aperture, and

an end part on a side of said first opening of a portion of said first case body on the downstream side of the first internal space being protruded in said one remaining side farther from the second electrode body in the arranging direction relative to said first electrode body.

61. (Previously Presented) An electrode structure according to claim 60, further comprising:

an elongate lid made of a solid dielectric material for closing said first opening,

said lid having a longer length dimension in the longitudinal direction and a shorter width dimension in the passage direction,

an end part on the downstream side of said lid covering an end surface of said protruded end part in a location more forward in said one remaining side

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farther from the second electrode body in the arranging direction from said first electrode body.

62. (Previously Presented) An electrode structure according to claim 60, wherein said electrode structure further comprises:

an elongate dielectric second case body that is longer in said longitudinal direction and shorter in the passage direction, said second case body being arranged in parallel with said first case body in said arranging direction,

said second case body being formed a cross section orthogonal to said longitudinal direction into a U-shape so that said second case body has a second internal space and a second opening,

both the upstream and the downstream sides of the second internal space in the passage direction and a side of the second internal space nearer to the first electrode body in the arranging direction being surrounded by the second case body, and an opposite side of the second internal space farther from the first electrode body in the arranging direction being opened and provided as the second opening,

said gas passage being defined between said first and second case bodies,

said second electrode body being received in said second internal space so that said second surface is contacted with an inner peripheral surface of said second case body, and

an end part on a side of said second opening of a portion of said second case body on the downstream side of the second internal space being protruded in said

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opposite side farther from the first electrode body in said arranging direction relative to said second electrode body.

63. (Previously Presented) An electrode structure according to claim 62, wherein said first dielectric case body and said second dielectric case body are separately formed.
64. (Previously Presented) An electrode structure according to claim 63, wherein said first dielectric case body has an opposing surface abutted with said second dielectric case body, and said opposing surface is provided with a recess to serve as said gas passage.
65. (Previously Presented) An electrode structure according to claim 62, wherein said first dielectric case body and said second dielectric case body are integrally connected to one another.
66. (Previously Presented) An electrode structure according to claim 62, wherein flow passage sectional area of said gas passage varies along said passage direction.
67. (Previously Presented) An electrode structure according to claim 62, wherein said first dielectric case body has a plate defining said gas passage, and a thickness of said plate varies along said passage direction.
68. (Previously Presented) An electrode structure according to claim 62, wherein a distance between said first electrode body and said second electrode body varies along said passage direction.
69. (Previously Presented) An electrode structure according to claim 62, wherein said first dielectric case body is provided with a gas uniformizing passage for dispersing said processing gas uniformly in said longitudinal direction and for introducing said processing gas into said gas passage.